

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

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**PROPOSED STATE STANDARDS  
TITLE 8**

CONSTRUCTION SAFETY ORDERS, CHAPTER 4, SUBCHAPTER 4,  
ARTICLE 4, SECTIONS 1529, 1532, 1532.1, AND 1535;  
GENERAL INDUSTRY SAFETY ORDERS, CHAPTER 4, SUBCHAPTER 7,  
ARTICLE 107, SECTION 5144;  
ARTICLE 109, SECTIONS 5190 AND 5198; AND  
ARTICLE 110, SECTIONS 5200, 5202, 5207, 5208,  
5210, 5211, 5212, 5213, 5214, 5217, 5218, AND 5220;  
SHIP BUILDING, SHIP REPAIRING, AND SHIP BREAKING SAFETY ORDERS  
CHAPTER 4, SUBCHAPTER 18, ARTICLE 4, SECTION 8358  
RESPIRATORY PROTECTION

Amend Section 1529, Asbestos to read:  
§ 1529. Asbestos.

\* \* \*

(h) Respiratory protection.

\* \* \*

(3) Respirator selection.

(A) The employer shall select, and provide to employees, the appropriate respirators as specified in Table 1 Section 5144(d)(3)(A)1.; however, employers shall not select or use filtering facepiece respirators for use against asbestos fibers.

**TABLE 1  
RESPIRATORY PROTECTION FOR ASBESTOS FIBERS**

*Airborne concentration of asbestos  
or conditions of use*

*Required respirator*

~~Not in excess of 1 f/cc (10 X PEL), or  
otherwise as required independent of  
exposure pursuant to (h)(2)(D) of this  
section.~~

~~Half mask air purifying respirator other  
than a disposable respirator, equipped with  
high efficiency filters.~~

~~Not in excess of 5 f/cc (50 X PEL).~~

~~Full facepiece air purifying respirator  
equipped with high efficiency filters.~~

~~Not in excess of 10 f/cc (100 X PEL).~~

~~Any powered air purifying respirator  
equipped with high efficiency filters or any  
supplied air respirator operated in  
continuous flow mode.~~

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~~Not in excess of 100 f/cc (1,000 X PEL).~~

~~Full facepiece supplied air respirator  
operated in pressure demand mode.~~

~~Greater than 100 f/cc (1,000 X PEL) or  
unknown concentration.~~

~~Full facepiece supplied air respirator  
operated in pressure demand mode,  
equipped with an auxiliary positive  
pressure self-contained breathing  
apparatus.~~

~~Note: a. Respirators assigned for high environmental concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.~~

~~Note: b. A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.~~

~~(B) The employer shall provide HEPA filters for powered and non-powered air-purifying respirators.~~

~~(C) The employer shall provide a tight fitting powered, air- purifying respirator in lieu of any negative-pressure respirator specified in Table 1 selected according to subsection (h)(3)(A) whenever:~~

- ~~1. An employee chooses to use this type of respirator; and~~
- ~~2. This respirator will provide adequate protection to the employee.~~

~~(D) The employer shall provide a half-mask air purifying respirator, other than a disposable filtering facepiece respirator, equipped with high efficiency filters whenever the employee performs:~~

- ~~1. Class II and III asbestos work and a negative exposure assessment has not been conducted by the employer;~~
- ~~2. Class III jobs where TSI or surfacing ACM or PACM is being disturbed.~~

~~(E) In addition to the above selection criteria, when employees are in a regulated area where Class I work is being performed, a negative exposure assessment of the area has not been produced, and the exposure assessment of the area indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average, employers must provide the employees with one of the following respirators: a full facepiece supplied-air respirator operated in the pressure-demand mode and equipped with an auxiliary positive pressure self-contained breathing apparatus. When the exposure assessment of the area indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average, employers must provide the employees with one of the following respirators:~~

- ~~1. A tight-fitting powered air-purifying respirator equipped with high efficiency filters;~~
- ~~2. A full facepiece supplied air-respirator operated in the pressure-demand mode equipped with HEPA egress cartridges or an auxiliary positive-pressure, self-contained breathing apparatus (SCBA); or~~
- ~~3. A full facepiece supplied-air respirator operated in the pressure demand mode equipped with~~

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~~an auxiliary positive pressure self-contained breathing apparatus. A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus must be provided under such conditions when the exposure, assessment indicates exposure levels above 1 f/cc as an 8-hour time-weighted average.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 6501.5, 9020, 9021.5, 9021.9, 9030 and 9040, Labor Code. Reference: Sections 142.3, 6501.5, 6501.7, 6501.8, 6501.9, 6502, 9003, 9004(b), 9005, 9006, 9009, 9020, 9021.5, 9021.9, 9030 and 9040, Labor Code; Section 25910, Health and Safety Code; and Sections 7180, 7180.5, 7181, 7182, 7183, 7183.5, 7184, 7185, 7187, 7189, 7189.5 and 7189.7, Business and Professions Code.

\* \* \*

Amend Section 1532 to read:  
§ 1532. Cadmium.

\* \* \*

(g) Respiratory Protection.

\* \* \*

(3) Respirator Selection.

(A) The employer must select, and provide to employees, the appropriate respirators ~~from Table 1 of this section~~ specified in Section 5144(d)(3)(A)1.

Table 1.  
~~RESPIRATORY PROTECTION FOR CADMIUM~~

| <del>Airborne Concentration or Condition of Use<sup>a</sup></del> | <del>Required Respirator Type<sup>b</sup></del>   |
|---|---|
| <del>10 X or less</del>   | <del>A half mask, air-purifying respirator equipped with a HEPA<sup>c</sup> filter<sup>d</sup></del>  |
| <del>25 X or less</del>   | <del>A powered air-purifying respirator ("PAPR") with a loose-fitting hood or helmet equipped with a HEPA filter, or a supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous flow mode</del> |
| <del>50 X or less</del>   | <del>A full facepiece air-purifying respirator equipped with a HEPA filter, or a powered air-purifying respirator with a tight-fitting</del>  |

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|                     |  |
|---------------------|--|
|                     | <del>half mask equipped with a HEPA filter, or<br/>a supplied air respirator with a tight-fitting<br/>half mask operated in the continuous flow<br/>mode</del>   |
| 250 X or less       | <del>A powered air-purifying respirator with a<br/>tight-fitting full facepiece equipped with a<br/>HEPA filter, or supplied air respirator with<br/>a tight-fitting full facepiece operated in the<br/>continuous flow mode</del>   |
| 1000 X or less      | <del>A supplied air respirator with half mask or<br/>full facepiece operated in the pressure<br/>demand or other positive pressure mode</del>  |
| > 1000 X or unknown | <del>A self-contained breathing apparatus with a<br/>full facepiece operated in the pressure<br/>demand or other positive pressure mode, or<br/>a supplied air respirator with a full<br/>facepiece operated in the pressure demand<br/>or other positive pressure mode and<br/>equipped with an auxiliary escape type<br/>self-contained breathing apparatus operated<br/>in the pressure demand mode</del> |
| Fire fighting       | <del>A self-contained breathing apparatus with<br/>full facepiece operated in the pressure<br/>demand or other positive pressure mode</del>  |

-

<sup>a</sup> ~~Concentrations expressed as multiple of the PEL.~~

<sup>b</sup> ~~Respirators assigned for higher environmental concentrations may be used at lower exposure levels. Quantitative fit testing is required for all tight-fitting air-purifying respirators where airborne concentration of cadmium exceeds 10 times the TWA PEL ( $10 \times 5 \mu\text{g}/\text{m}^3 = 50 \mu\text{g}/\text{m}^3$ ). A full facepiece respirator is required when eye irritation is experienced.~~

<sup>c</sup> ~~HEPA means High Efficiency Particulate Air.~~

<sup>d</sup> ~~Fit testing, qualitative or quantitative, is required.~~

~~Source: Respiratory Decision Logic, NIOSH, 1987.~~

~~(B) The employer shall provide a powered, air-purifying respirator (PAPR) in lieu of a negative pressure respirator wherever:~~

~~1. An employee entitled to a respirator chooses to use this type of respirator; and~~

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2. This respirator will provide adequate protection to the employee.

(C) The employer shall provide employees with full facepiece respirators when they experience eye irritation.

(D) The employer shall provide HEPA filters for powered and non-powered air-purifying respirators.

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend section 1532.1 to read:

§ 1532.1. Lead.

\* \* \*

(f) Respiratory protection.

\* \* \*

(3) Respirator selection.

(A) The employer shall select, and provide to employees, the appropriate respirator or combination of respirators ~~from Table I below~~ specified in Section 5144(d)(3)(A)1.

(B) The employer shall provide a powered, air-purifying respirator in lieu of the respirator specified in ~~Table I~~ Section 5144(d)(3)(A)1. whenever:

1. An employee chooses to use this type of respirator; and

2. This respirator will provide adequate protection to the employee.

(C) The employer shall provide employees with a full facepiece respirator instead of a half mask respirator for protection against lead aerosols that may cause eye or skin irritation at the use concentrations.

(D) The employer shall provide HEPA filters for powered and non-powered air-purifying respirators.

**Table I. — Respiratory Protection for Lead Aerosols**

~~Airborne concentration of lead  
or condition of use~~

~~Required respirator<sup>1</sup>~~

~~Not in excess of 500 µg/m<sup>3</sup>~~

~~\*1/2 mask air purifying respirator with  
high efficiency filters.<sup>2,3</sup>~~

~~\*1/2 mask supplied air respirator operated  
in demand (negative pressure) mode.~~

~~Not in excess of 1,250 µg/m<sup>3</sup>.~~

~~\*Loose fitting hood or helmet powered air~~

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|  |   |
|--|---|
|  | <p><del>purifying respirator with high efficiency filters.<sup>3</sup></del></p> <p><del>*Type C hood or helmet supplied air respirator operated in continuous flow mode—(Type CE abrasive blasting respirators operated in continuous flow mode see below.)</del></p> <p><del>*Full facepiece air purifying respirator with high efficiency filters.<sup>3</sup></del></p> <p><del>*Tight fitting powered air purifying respirator with high efficiency filters.<sup>3</sup></del></p> <p><del>*Full facepiece supplied air respirator operated in demand mode</del></p> |
| <p>Not in excess of 2,500 <math>\mu\text{g}/\text{m}^3</math>:</p>   | <p><del>*1/2 mask or full facepiece supplied air respirator operated in a continuous flow mode</del></p> <p><del>*Full facepiece self-contained breathing apparatus (SCBA) operated in demand mode.</del></p>   |
| <p>Not in excess of 50,000 <math>\mu\text{g}/\text{m}^3</math>:</p>  | <p><del>*1/2 mask supplied air respirator operated in pressure demand or other positive-pressure mode.</del></p> <p><del>*Type CE hood or helmet abrasive blasting respirator operated in a continuous flow mode.<sup>4</sup></del></p>   |
| <p>Not in excess of 100,000 <math>\mu\text{g}/\text{m}^3</math>:</p>   | <p><del>*Full facepiece supplied air respirator operated in pressure demand or other positive pressure mode—e.g., type CE abrasive blasting respirators operated in a positive pressure mode.</del></p>   |
| <p>Greater than 100,000 <math>\mu\text{g}/\text{m}^3</math>; unknown concentration, or fire fighting.</p> <p>-</p> | <p><del>*Full facepiece SCBA operated in pressure demand or other positive pressure mode.</del></p> <p><sup>1</sup>Respirators specified for higher concentrations can be used at lower concentrations of lead.</p> <p><sup>2</sup>Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.</p>  |

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<sup>3</sup> ~~A high efficiency particulate filter (HEPA) means a filter that is 99.97 percent efficient against particles of 0.3 micron size or larger.~~

<sup>4</sup> ~~These are Type CE respirators with neck cuff or neck sealing feature to help maintain positive air pressure in the respiratory inlet covering.~~

\* \* \*

NOTE: Authority cited: Sections 142.3 and 6717, Labor Code. Reference: Sections 142.3 and 6717, Labor Code.

\* \* \*

Amend Section 1535 to read:  
§ 1535. Methylenedianiline.

\* \* \*

(i) Respiratory protection.

\* \* \*

(3) Respirator selection.

(A) ~~The employer must select, and provide to employees, the appropriate respirators from Table 1 of this section. specified in Section 5144(d)(3)(A)1.~~

(B) An employee who cannot wear a negative pressure respirator shall be given the option of wearing a positive pressure respirator or a supplied-air respirator operated in the continuous flow or pressure demand mode.

(C) Employers shall provide HEPA filters for powered and non-powered air-purifying respirators.

(D) For escape, employers shall provide employees with one of the following respirator options: any self-contained breathing apparatus with a full facepiece or hood operated in the positive-pressure or continuous-flow mode; or a full facepiece air-purifying respirator.

(E) Employers shall provide a combination HEPA filter and organic vapor canister or cartridge with air-purifying respirators when MDA is in liquid form or used as part of a process requiring heat.

**TABLE 1. ~~Respiratory Protection for MDA~~**

*~~Airborne Concentration of MDA or  
Condition of Use~~*

*~~Respirator Type~~*

~~a. Less than or equal to 10 x PEL~~

~~(1) Half Mask Respirator with HEPA<sup>+</sup>  
Cartridge.<sup>2</sup>~~

~~b. Less than or equal to 50 x PEL~~

~~(1) Full facepiece respirator with HEPA<sup>+</sup>  
Cartridge or Canister.<sup>2</sup>~~

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~~c. Less than or equal to 1000 x PEL~~

~~(1) Full facepiece powered air purifying respirator with HEPA<sup>1</sup> cartridges<sup>2</sup>~~

~~d. Greater than 1000 x PEL or unknown concentration~~

~~(1) Self-contained breathing apparatus with full facepiece in positive pressure mode.  
(2) Full facepiece positive pressure demand supplied air respirator with auxiliary self-contained air supply.~~

~~e. Escape~~

~~(1) Any full facepiece air purifying respirator with HEPA<sup>1</sup> cartridges<sup>2</sup>  
(2) Any positive pressure or continuous flow self-contained breathing apparatus with full facepiece or hood.~~

~~f. Firefighting~~

~~(1) Full facepiece self-contained breathing apparatus in positive pressure mode.~~

~~NOTE: Respirators assigned for higher environmental concentrations may be used at lower concentrations.~~

~~<sup>1</sup> High Efficiency Particulate Air filter (HEPA) means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers or larger.~~

~~<sup>2</sup> Combination HEPA/Organic Vapor Cartridges shall be used whenever MDA in liquid form or a process requiring heat is used.~~

\* \* \*

~~Note: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.~~

\* \* \*

~~Amend Section 5144, Respiratory Protection to read:~~

~~§ 5144. Respiratory Protection.~~

\* \* \*

~~(b) Definitions. The following definitions are important terms used in the respiratory protection standard in this section.~~

\* \* \*

~~Assigned protection factor (APF) ~~[Reserved]~~ means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.~~

\* \* \*



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Maximum use concentration (MUC) ~~[Reserved]~~ means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

\* \* \*

(d) Selection of respirators. This subsection requires the employer to evaluate respiratory hazard(s) in the workplace, identify relevant workplace and user factors, and base respirator selection on these factors. The subsection also specifies appropriately protective respirators for use in IDLH atmospheres, and limits the selection and use of air-purifying respirators.

\* \* \*

(3) Respirators for atmospheres that are not IDLH.

(A) The employer shall provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.

1. Assigned Protection Factors (APFs) ~~[Reserved]~~ Employers must use the assigned protection factors listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

Table 1.--Assigned Protection Factors <sup>5</sup>

| <u>Type of respirator</u> <sup>1,2</sup>                                     | <u>Quarter mask</u> | <u>Half mask</u>       | <u>Full facepiece</u> | <u>Helmet/hood</u>           | <u>Loose-fitting facepiece</u> |
|--|---------------------|------------------------|-----------------------|------------------------------|--------------------------------|
| 1. Air-Purifying Respirator.....   | <u>5</u>            | <sup>3</sup> <u>10</u> | <u>50</u>             | .....                        | .....                          |
| 2. Powered Air-Purifying Respirator (PAPR)....                               |                     | <u>50</u>              | <u>1,000</u>          | <sup>4</sup> <u>25/1,000</u> | <u>25</u>                      |
| 3. Supplied-Air Respirator (SAR) or Airline Respirator                       |                     |                        |                       |                              |                                |
| Demand mode.....   | .....               | <u>10</u>              | <u>50</u>             | .....                        | .....                          |
| Continuous flow mode.....  | .....               | <u>50</u>              | <u>1,000</u>          | <sup>4</sup> <u>25/1,000</u> | <u>25</u>                      |
| Pressure-demand or other positive-pressure mode.....                         | .....               | <u>50</u>              | <u>1,000</u>          | .....                        | .....                          |
| 4. Self-Contained Breathing Apparatus (SCBA)                                 |                     |                        |                       |                              |                                |
| Demand mode.....   | .....               | <u>10</u>              | <u>50</u>             | <u>50</u>                    | .....                          |
| Pressure-demand or other positive-pressure mode (e.g., open/closed circuit). | .....               | .....                  | <u>10,000</u>         | <u>10,000</u>                | .....                          |

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Notes:

1. Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.
  2. The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section, including training, fit testing, maintenance, and use requirements.
  3. This APF category includes filtering facepieces, and half masks with elastomeric facepieces.
  4. The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.
  5. These APFs do not apply to respirators used solely for escape. For escape respirators used in association with substances covered by substance-specific standards in Title 8, Division 1, Chapter 4, Subchapters 4, 7, and 18, employers must refer to the appropriate substance-specific standards. Escape respirators for other IDLH atmospheres are specified by subsection (d)(2)(B).
2. Maximum Use Concentration (MUC) {Reserved}
- a. The employer must select a respirator for employee use that maintains the employee's exposure to the hazardous substance, when measured outside the respirator, at or below the MUC.
  - b. Employers must not apply MUCs to conditions that are immediately dangerous to life or health (IDLH); instead, they must use respirators listed for IDLH conditions in subsection (d)(2) of this section.
  - c. When the calculated MUC exceeds the IDLH level for a hazardous substance, or the performance limits of the cartridge or canister, then employers must set the maximum MUC at that lower limit.

\* \* \*

(n) Dates.

~~(1) Effective date. This section is effective 90 days from filing. The obligations imposed by this section commence on the effective date unless otherwise noted in this subsection. Compliance with obligations that do not commence on the effective date shall occur no later than the applicable start-up date. Subsections (d)(3)(A)(1) and (d)(3)(A)(2) of this section become effective [                      \*                      ].~~

~~(2) Compliance dates. All obligations of this section commence on the effective date except as follows:~~

~~(A) The determination that respirator use is required (subsection (a)) shall be completed no later than 150 days from the effective date.~~

\* Effective date of these orders to be filled in by the Office of Administrative Law.

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~~(B) Compliance with provisions of this section for all other provisions shall be completed no later than 180 days from the effective date.~~

~~(3) Existing Respiratory Protection Programs. If, in the 12 month period preceding the effective date, the employer has conducted annual respirator training, fit testing, respirator program evaluation, or medical evaluations, the employer may use the results of those activities to comply with the corresponding provisions of this section, providing that these activities were conducted in a manner that meets the requirements of this section.~~

\* \* \*

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

\* \* \*

Amend Section 5190 to read:  
§ 5190. Cotton Dust.

\* \* \*

(f) Use of Respirators.

\* \* \*

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators ~~from the table below specified in Section 5144(d)(3)(A)1.~~; however, employers shall not select or use filtering facepieces for protection against cotton dust concentrations greater than five times (5x) the PEL.

**Table I**

*Cotton Dust Concentration*

*Required Respirator*

~~Not greater than--~~

~~(a) 5 x the applicable permissible exposure limit (PEL).~~

~~A disposable respirator with a particulate filter.~~

~~(b) 10 x the applicable PEL.~~

~~A quarter or half-mask respirator, other than a disposable respirator, equipped with particulate filters.~~

~~(c) 100 x the applicable PEL.~~

~~A full facepiece respirator equipped with high-efficiency particulate filters.~~

~~Greater than--~~

~~(d) 100 x the applicable PEL~~

~~A powered air-purifying respirator equipped with high-efficiency particulate filters.~~

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**Notes:**

- ~~1. A disposable respirator means the filter element is an inseparable part of the respirator.~~
  - ~~2. Any respirators permitted at higher environmental concentrations can be used at lower concentrations.~~
  - ~~3. Self-contained breathing apparatus are not required respirators but are permitted respirators.~~
  - ~~4. Supplied air respirators are not required but are permitted under the following cotton dust concentration conditions:~~
    - ~~a. Not greater than 10X the PEL—Any supplied air respirator;~~
    - ~~b. Not greater than 100X the PEL—Any supplied air respirator with full facepiece, helmet or hood;~~
    - ~~c. Greater than 100X the PEL—A supplied air respirator operated in positive pressure mode.~~
- (B) Whenever respirators are required by this section for concentrations not greater than 100 times the applicable permissible exposure limit, the employer shall, upon the request of the employee, provide a powered air purifying respirator with a high efficiency particulate filter in lieu of the respirator specified in subsections (a),(b), or (c) of Table I. Employers shall provide HEPA filters for powered and non-powered air-purifying respirators used at cotton dust concentrations greater than ten times (10x) the PEL.
- (C) Employers shall provide an employee with a powered air-purifying respirator (PAPR) instead of a non-powered air-purifying respirator selected according to subsection (f)(3) when the employee chooses to use a PAPR and it provides adequate protection to the employee as specified by subsection (f)(3).

\* \* \*

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

\* \* \*

Amend Section 5198 to read:

§ 5198. Lead.

\* \* \*

(f) Respiratory Protection.

\* \* \*

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators ~~or combination of respirators from the following table:~~ specified in Section 5144(d)(3)(A)1.

**RESPIRATORY PROTECTION FOR LEAD AEROSOLS**

*Airborne Concentration of Lead or  
Condition of Use*

*Required Respirator<sup>1</sup>*

Not in excess of 0.5 mg/M<sup>3</sup> (10 x PEL)

Half mask, air purifying respirator  
equipped with high efficiency filter. 2,3

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~~Not in excess of 2.5 mg/M<sup>3</sup> (50 x PEL)~~

~~Full facepiece, air-purifying respirator with high efficiency filter.<sup>3</sup>~~

~~Not in excess of 50 mg/M<sup>3</sup> (1000 x PEL)~~

~~Any powered, air-purifying respirator with high efficiency filter<sup>3</sup>; or  
Half mask supplied air respirator operated in positive pressure mode.<sup>2</sup>~~

~~Not in excess of 100 mg/M<sup>3</sup> (2000 x PEL)~~

~~Supplied air respirators with full facepiece, hood, helmet, or suit, operated in positive pressure mode.~~

~~Greater than 100 mg/M<sup>3</sup>, unknown concentration or fire fighting.~~

~~Full facepiece, self-contained breathing apparatus operated in positive pressure mode; or  
Combination breathing apparatus: supplied air, positive pressure full facepiece respirator with auxiliary self-contained compressed air supply.~~

-

<sup>1</sup>~~Respirators specified for high concentrations can be used at lower concentrations of lead.~~

<sup>2</sup>~~Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.~~

<sup>3</sup>~~A high efficiency particulate filter means 99.97 percent efficient against 0.3  $\mu$ m size particles.~~

~~(B) The employer shall provide a powered, air purifying respirator in lieu of the respirator specified in subsection (f)(3)(A) whenever:~~

- ~~1. An employee chooses to use this type of respirator; and~~
- ~~2. This respirator will provide adequate protection to the employee.~~

~~(C) The employer shall provide employees with full facepiece respirators instead of half mask respirators for protection against lead aerosols that cause eye or skin irritation at the use concentrations.~~

~~(D) The employer shall provide HEPA filters for powered and non-powered air-purifying respirators.~~

\* \* \*

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

\* \* \*

Amend Section 5200 to read:  
§ 5200. Methylenedianiline.

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\* \* \*

(h) Respiratory protection.

\* \* \*

(3) Respirator selection.

(A) The employer shall select the appropriate respirators as specified in Table 1 Section 5144(d)(3)(A)1., and shall assure that the employee uses the respirator provided.

(B) Any employee who cannot wear a negative pressure respirator shall be given the option of wearing a positive pressure respirator or any supplied-air respirator operated in the continuous flow or pressure demand mode.

(C) The employer shall provide HEPA filters for powered and non-powered air-purifying respirators.

(D) For escape, the employer shall provide employees with one of the following respirator options: Any self-contained breathing apparatus with a full facepiece or hood operated in the positive-pressure or continuous-flow mode; or a full facepiece air-purifying respirator.

(E) The employer shall provide a combination HEPA filter and organic vapor canister or cartridge with powered or non-powered air-purifying respirators when MDA is in liquid form or used as part of a process requiring heat.

**TABLE 1. Respiratory Protection for MDA**

| <i><del>Airborne Concentration of MDA or Condition of Use</del></i> | <i><del>Respirator Type</del></i>  |
|---|--|
| <del>a. Less than or equal to 10 x PEL</del>                        | <del>(1) Half-Mask Respirator with HEPA<sup>+</sup> Cartridge<sup>2</sup></del>  |
| <del>b. Less than or equal to 50 x PEL</del>                        | <del>(1) Full facepiece Respirator with HEPA<sup>+</sup> Cartridge or Canister<sup>2</sup></del>   |
| <del>c. Less than or equal to 1000 PEL</del>                        | <del>(1) Full facepiece powered air-purifying respirator with HEPA<sup>+</sup> cartridges<sup>2</sup></del>  |
| <del>d. Greater than 1000 x PEL or unknown concentrations</del>     | <del>(1) Self-contained breathing apparatus with full facepiece in positive pressure mode.<br/>(2) Full facepiece positive pressure demand supplied-air respirator with auxiliary self-contained air supply.</del> |
| <del>e. Escape</del>  | <del>(1) Any full facepiece air-purifying respirator with HEPA<sup>+</sup> cartridges<sup>2</sup><br/>(2) Any positive pressure or continuous</del>  |

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f. Firefighting

~~flow self-contained breathing apparatus  
with full facepiece or hood.~~

~~(1) Full face self-contained breathing  
apparatus in positive pressure demand  
mode.~~

~~NOTE: Respirators assigned for higher environmental concentrations may be used at lower  
concentrations.~~

~~<sup>1</sup>High Efficiency Particulate Air filter (HEPA) means a filter that is at least 99.97 percent  
efficient against mono-dispersed particles of 0.3 micrometers or larger.~~

~~<sup>2</sup>Combination HEPA/Organic Vapor Cartridges shall be used whenever MDA in liquid form or a  
process requiring heat is used.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections  
142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5202 to read:  
§ 5202. Methylene chloride.

\* \* \*

(g) *Respiratory protection.*

\* \* \*

(3) *Respirator selection.*

(A) The employer must select, and provide to employees, appropriate atmosphere-supplying  
respirators from Table 2 specified in Section 5144(d)(3)(A)1.; however employers must not  
select or use half masks of any type because MC may cause eye irritation or damage.

(B) For emergency escape, the employer shall provide employees with one of the following  
respirator options: A self-contained breathing apparatus operated in the continuous-flow or  
pressure-demand mode; or a gas mask with an organic vapor canister.

~~Table 2.—Minimum Requirements for Respiratory  
Protection for Airborne Methylene chloride~~

| <i>Methylene chloride airborne<br/>concentration(ppm) or condition of use</i> | <i>Minimum respirator required<sup>1</sup></i> |
|---|--|
| Up to 625 ppm (25 X PEL)  | (1) Continuous flow supplied-air               |

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|   |  |
|---|--|
|   | <del>respirator, hood or helmet.</del>   |
| Up to 1250 ppm (50 X 8 TWA PEL)   | <del>(1) Full facepiece supplied air respirator operated in negative pressure (demand) mode.<br/>(2) Full facepiece self-contained breathing apparatus (SCBA) operated in negative pressure (demand) mode.</del> |
| Up to 5000 ppm (200 X 8 TWA PEL)  | <del>(1) Continuous flow supplied air respirator, full facepiece.<br/>(2) Pressure demand supplied air respirator, full facepiece.<br/>(3) Positive pressure full facepiece SCBA.</del>                          |
| Unknown concentration, or above 5000 ppm (Greater than 200 X 8 TWA PEL) | <del>(1) Positive pressure full facepiece SCBA.<br/>(2) Full facepiece pressure demand supplied air respirator with an auxiliary self-contained air supply.</del>  |
| Fire fighting   | <del>Positive pressure full facepiece SCBA.</del>  |
| Emergency escape  | <del>(1) Any continuous flow or pressure demand SCBA.<br/>(2) Gas mask with organic vapor canister.</del>  |

<sup>+</sup> Respirators assigned for higher airborne concentrations may be used at lower concentrations.

~~(4) Medical Evaluation. Before having any employee use a supplied air respirator in the negative pressure mode, or a gas mask with organic vapor canister for emergency escape, the employer must:~~

~~(A) Have a physician or other licensed health care professional (PLHCP) evaluate the employee's ability to use such respiratory protection.~~

~~(B) Ensure that the PLHCP provides their findings in a written opinion to the affected employee and the employer.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5207 to read:  
§ 5207. Cadmium.

\* \* \*

(g) Respirator Protection.

\* \* \*



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(3) Respirator Selection.

(A) The employer shall select, and provide the appropriate respirators as specified in Table 2 Section 5144(d)(3)(A)1.

Table 2

**RESPIRATORY PROTECTION FOR CADMIUM**

| <del>Airborne Concentration or Condition of Use<sup>a</sup></del> | <del>Required Respirator Type<sup>b</sup></del>  |
|---|--|
| <del>10 X or less</del>   | <del>A half mask, air-purifying respirator equipped with a HEPA<sup>c</sup> filter<sup>d</sup></del>   |
| <del>25 X or less</del>   | <del>A powered air-purifying respirator ("PAPR") with a loose fitting hood or helmet equipped with a HEPA filter, or a supplied air respirator with a loose fitting hood or helmet facepiece operated in the continuous flow mode</del>  |
| <del>50 X or less</del>   | <del>A full facepiece air-purifying respirator equipped with a HEPA filter, or a powered air-purifying respirator with a tight fitting half mask equipped with a HEPA filter, or a supplied air respirator with a tight fitting half mask operated in the continuous flow mode</del> |
| <del>250 X or less</del>  | <del>A powered air-purifying respirator with a tight fitting full facepiece equipped with a HEPA filter, or supplied air respirator with a tight fitting full facepiece operated in the continuous flow mode</del>   |
| <del>1000 X or less</del>   | <del>A supplied air respirator with half mask or full facepiece operated in the pressure demand or other positive pressure mode</del>  |
| <del>≥ 1000 X or unknown concentrations</del>                     | <del>A self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode, or</del>  |

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**Fire fighting**

~~a supplied air respirator with a full  
facepiece operated in the pressure demand  
or other positive pressure mode and  
equipped with an auxiliary escape type self  
contained breathing apparatus operated in  
the pressure demand mode~~

~~A self contained breathing apparatus with  
full facepiece operated in the pressure  
demand or other positive pressure mode~~

~~<sup>a</sup> Concentrations expressed as multiple of the PEL.~~

~~<sup>b</sup> Respirators assigned for higher environmental concentrations may be used at lower exposure levels. Quantitative fit testing is required for all tight fitting air purifying respirators where airborne concentration of cadmium exceeds 10 times the TWA PEL ( $10 \times 5 \mu\text{g}/\text{m}^3 = 50 \mu\text{g}/\text{m}^3$ ). A full facepiece respirator is required when eye irritation is experienced.~~

~~<sup>c</sup> HEPA means High Efficiency Particulate Air.~~

~~<sup>d</sup> Fit testing, qualitative or quantitative, is required.~~

~~Source: Respiratory Decision Logic, NIOSH, 1987.~~

~~(B) The employer shall provide a powered, air-purifying respirator (PAPR) in lieu of a negative pressure respirator wherever:~~

- ~~1. An employee entitled to a respirator chooses to use this type of respirator; and~~
- ~~2. This respirator will provide adequate protection to the employee.~~

~~(C) Employers shall provide employees with full facepiece respirators when they experience eye irritation.~~

~~(D) Employers shall provide HEPA filters for powered and non-powered respirators.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5208 to read:  
§ 5208. Asbestos.

\* \* \*

(g) Respiratory protection -

\* \* \*

(2) Respirator program.

(A) The employer must implement a respirator program in accordance with section 5144(b) through (d) (except (d)(1)(C)), and (f) through (m).

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(B) The employer must provide a tight-fitting powered, air-purifying respirator instead of any negative pressure respirator ~~specified in Table 1~~ selected according to subsection (g)(3) when:

1. An employee chooses to use this type of respirator; and
2. This respirator provides adequate protection to the employee.

\* \* \*

(3) Respirator selection.

(A) The employer shall select, and provide to employees, the appropriate respirators as specified in ~~Table 1~~ Section 5144(d)(3)(A)1.; however, employers must not select or use filtering facepiece respirators for protection against asbestos fibers.

(B) Employers shall provide HEPA filters for powered and non-powered air-purifying respirators.

Table 1.  
Respiratory Protection for Asbestos Fibers

| <i><del>Airborne concentration of asbestos or conditions of use.</del></i> | <i><del>Required respirator</del></i>  |
|--|--|
| <del>Not in excess of 1 f/cc (10 X PEL).</del>                             | <del>Half mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters.</del>   |
| <del>Not in excess of 5 f/cc 50 X PEL).</del>                              | <del>Full facepiece air purifying respirator equipped with high efficiency filters.</del>  |
| <del>Not in excess of 10 f/cc (100 X PEL).</del>                           | <del>Any powered air purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode.</del>               |
| <del>Not in excess of 100 f/cc (1,000 X PEL).</del>                        | <del>Full facepiece supplied air respirator operated in pressure demand mode.</del>  |
| <del>Greater than 100 f/cc (1,000 X PEL) or unknown concentration.</del>   | <del>Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.</del> |
| <del>-</del>   |  |

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Note: a. ~~Respirators assigned for high environmental concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.~~

Note: b. ~~A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 6501.5, 9020, 9021.5, 9030, and 9040, Labor Code.  
Reference: Sections 142.3, 6501.5, 6501.7, 6501.8, 6501.9, 6502, 9003, 9004(b), 9005, 9006, 9009, 9020, 9021.5, 9030, and 9040, Labor Code; and Section 25910, Health and Safety Code.

\* \* \*

Amend Section 5210 to read:  
§ 5210. Vinyl Chloride.

\* \* \*

(g) Respiratory Protection.

\* \* \*

(3) Respirator selection.

(A) The appropriate Respirators shall be selected, and provided to employees, ~~from the following table as specified in Section 5144(d)(3)(A)1.:~~

~~Atmospheric Concentration of Vinyl Chloride~~

~~Required Apparatus~~

(A) ~~Unknown, or above 3,600 ppm~~  
(B) ~~Not over 3,600 ppm~~

~~Open circuit, self contained breathing apparatus, pressure demand type with full facepiece.~~  
~~1. Combination type C supplied air respirator, pressure demand type, with full or half facepiece and auxiliary self-contained air supply; or~~  
~~2. Combination type C, supplied air respirator continuous flow type, with full or half facepiece, and auxiliary self contained air supply.~~

(C) ~~Not over 1000 ppm~~  
(D) ~~Not over 100 ppm~~

~~1. Type C, supplied air respirator, continuous flow type, with full or half facepiece helmet or hood.~~  
~~1. Combination type C supplied air~~

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(E) Not over 25 ppm

~~respirator, demand type, with full facepiece and auxiliary self-contained air supply; or~~  
~~2. Open-circuit self-contained breathing apparatus with full facepiece, in demand mode; or~~  
~~3. Type C supplied-air respirator, demand type, with full facepiece.~~

1. A powered air-purifying respirator with hood, helmet, full or half facepiece, and a canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm, or  
2. Gas mask, front or back-mounted canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm.

(F) Not over 10 ppm

1. Combination type C supplied-air respirator, demand type, with half facepiece, and auxiliary self-contained air supply; or  
2. Type C supplied-air respirator, demand type, with half facepiece; or  
3. Any chemical cartridge respirator with an organic vapor cartridge which provides a service life of at least 1 hour for concentrations of vinyl chloride up to 10 ppm.

(B) ~~Where air-purifying respirators are used:~~

- ~~1. Air-purifying canisters or cartridges shall be replaced prior to the expiration of their service life or the end of the shift in which they are first used, whichever occurs first, and~~
- ~~2. A continuous monitoring and alarm system shall be provided where concentrations of vinyl chloride could reasonably exceed the allowable concentrations for the devices in use. Such system shall be used to alert employees when vinyl chloride concentrations exceed the allowable concentrations for the devices in use. Employers shall provide an organic vapor cartridge that has a service life of at least one hour when using a chemical cartridge respirator at vinyl chloride concentrations up to 10 ppm.~~

(C) ~~Respirators specified for higher concentrations may be used for lower concentrations. Employers shall select a canister that has a service life of at least four hours when using a~~

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powered air-purifying respirator having a hood, helmet, or full or half facepiece, or a gas mask with a front- or back-mounted canister, at vinyl chloride concentrations up to 25 ppm.

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5211 to read:  
§ 5211. Coke Oven Emissions.

\* \* \*

(p) Respiratory Protection.

\* \* \*

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators or combination of respirators from the following table: specified in Section 5144(d)(3)(A)1.; however, employers may use a filtering facepiece respirator only when it functions as a filter respirator for coke oven emissions particulates.

***RESPIRATORY PROTECTION FOR COKE OVEN EMISSIONS***

*~~Airborne Concentration of Coke Oven  
Emission~~*

*~~Required Respirator~~*

~~1. Concentrations not greater than 1.5  
milligrams per cubic meter~~

~~1. Any particulate filter respirator for dust  
and mist, except single-use respirator, or  
2. Any particulate filter respirator or  
combination chemical cartridge and  
particulate filter respirator for coke oven  
emissions.~~

~~2. Concentrations greater than 1.5  
milligrams per cubic meter (but may be  
used at any concentration)~~

~~1. A Type C supplied air respirator  
operated in pressure demand or other  
positive pressure or continuous flow mode;  
or  
2. A powered air-purifying particulate filter  
respirator for dust or mist, or  
3. A powered air-purifying particulate filter  
respirator or powered combination  
chemical cartridge and particulate filter  
respirator for coke oven emissions.~~

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\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5212 to read:

§ 5212. 1,2 Dibromo-3-Chloropropane(DBCP).

\* \* \*

(h) Respirators.

\* \* \*

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate atmosphere-supplying respirator from the following table specified in Section 5144(d)(3)(A)1.

(B) The employer shall provide employees with one of the following respirator options to use for entry into, or escape from, unknown DBCP concentrations:

1. A combination respirator that includes a supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure or continuous-flow mode, as well as an auxiliary self-contained breathing apparatus (SCBA) operated in a pressure-demand or positive-pressure mode.

2. An SCBA with a full facepiece operated in a pressure-demand or other positive-pressure mode.

***RESPIRATORY PROTECTION FOR DBCP***

***Concentration of Airborne DBCP or  
Condition of Use***

***Respirator Type***

***(A) Not greater than 10 ppb.***

***1. Any supplied air respirator or  
2. any self-contained breathing apparatus.***

***(B) Not greater than 50 ppb.***

***1. Any supplied air respirator with full  
facepiece, helmet, or hood; or  
2. any self-contained breathing apparatus  
with full facepiece.***

***(C) Not greater than 1,000 ppb.***

***A Type C supplied air respirator operated  
in pressure demand or other positive  
pressure or continuous flow mode.***

***(D) Not greater than 2,000 ppb.***

***A Type C supplied air respirator with full  
facepiece operated in pressure demand or***

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- ~~(E) Greater than 2,000 ppb or entry and escape from unknown concentrations.~~
- ~~other positive pressure mode, or with full facepiece, helmet, or hood operated in continuous flow mode.~~
- ~~1. A combination respirator which includes a Type C supplied air respirator with full facepiece operated in pressure demand or other positive pressure or continuous flow mode and an auxiliary self-contained breathing apparatus operated in pressure demand or positive pressure mode; or~~
- ~~2. a self-contained breathing apparatus with full facepiece operated in pressure demand or other positive pressure mode.~~
- ~~(F) Firefighting~~
- ~~A self-contained breathing apparatus with full facepiece operated in pressure demand or other positive pressure mode.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5213 to read:  
§ 5213. Acrylonitrile.

\* \* \*

(h) Respiratory Protection.

\* \* \*

(2) Respirator program.

(A) The employer must implement a respiratory protection program in accordance with section 5144 (b) through (d) (except (d)(1)(C), ~~and (d)(3)(C)2.a. and b.~~), and (f) through (m).

~~(B) If air purifying respirators (chemical cartridge or chemical canister type) are used:~~

~~1. The air purifying canister or cartridge must be replaced prior to the expiration of their service life or at the completion of each shift, whichever occurs first.~~

~~2. A label must be attached to the cartridge or canister to indicate the date and time at which it is first installed on the respirator.~~

(3) Respirator selection.



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(A) The employer must select, and provide to employees, the appropriate respirators from the following table: specified in Section 5144(d)(3)(A)1.

**~~RESPIRATORY PROTECTION FOR AIRBORNE ACRYLONITRILE~~**

*~~Concentration of Acrylonitrile or Condition  
of Use~~*

*~~Respirator Type~~*

~~1. Any concentration not greater than 20  
ppm.~~

~~a. Any chemical cartridge respirator with  
organic vapor cartridge and half-mask; or  
b. Any supplied air respirator with half-  
mask.~~

~~2. Any concentration not greater than 100  
ppm or the maximum use concentration  
(MUC) of cartridges or canisters,  
whichever is lower.~~

~~a. Full facepiece respirator with organic  
vapor cartridge, organic vapor gas  
mask (chin style), or organic vapor gas  
mask canister (front or back mounted);  
b. Any supplied air respirator with full  
facepiece; or  
c. Any self-contained breathing apparatus  
with full facepiece.~~

~~3. Any concentration not greater than 4,000  
ppm.~~

~~a. Supplied air respirator in positive-  
pressure mode with full facepiece, helmet,  
hood, or suit.~~

~~4. Greater than 4,000 ppm or unknown  
concentration.~~

~~a. Supplied air respirator and auxiliary self-  
contained breathing apparatus with full  
facepiece in positive pressure mode; or  
b. Self contained breathing apparatus with  
full facepiece in positive pressure mode.~~

~~5. Firefighting.~~

~~a. Self-contained breathing apparatus with  
full facepiece in positive pressure mode.~~

~~6. Escape.~~

~~a. Any organic vapor respirator; or  
b. Any self-contained breathing apparatus.~~

(B) For escape, the employer shall provide employees with any organic vapor respirator or any self-contained breathing apparatus permitted for use under subsection (h)(3).

\* \* \*

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NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5214 to read:  
§ 5214. Inorganic Arsenic.

\* \* \*

(h) Respiratory Protection.

\* \* \*

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators or combination of respirators from the following table specified in Section 5144(d)(3)(A)1.

**RESPIRATORY PROTECTION FOR INORGANIC ARSENIC**

**CONCENTRATION OF AIRBORNE  
INORGANIC ARSENIC**

**RESPIRATOR TYPE**

1. Not greater than 0.1 milligrams (of compounds with no significant vapor pressure) per cubic meter

~~1A. Air purifying, with high particulate filter\* and half mask;~~  
~~1B. Any supplied air respirator with half mask.~~

2. Not greater than 0.1 milligrams of arsenic trichloride (and all compounds with significant vapor pressure) per cubic meter

~~2A. See respirator type required under 5.~~

3. Not greater than 0.25 milligrams (of compounds with no significant vapor pressure) per cubic meter

~~3A. Powered air purifying, with high efficiency particulate filter\* and hood or helmet.~~

4. Not greater than 0.5 milligrams (of compounds with no significant vapor pressure) per cubic meter

~~4A. Air purifying, with high efficiency particulate filter\* and full facepiece;~~  
~~4B. Any supplied air respirator with full facepiece;~~  
~~4C. Any self contained breathing apparatus with full facepiece.~~

5. Not greater than 0.5 milligrams of arsenic trichloride (and all compounds with significant vapor pressure) per cubic

~~5A. Gas mask, front or back mounted, equipped with high efficiency filter\*, acid gas canister, and full facepiece;~~

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meter

~~5B. Any supplied air respirator with full facepiece;~~  
~~5C. Any self-contained breathing apparatus with full facepiece.~~

~~6A. Powered air-purifying, with high efficiency particulate filter\* and full facepiece.~~

~~6. Not greater than 1 milligram (of compounds with no significant vapor pressure) per cubic meter~~

~~6B. Supplied air, operated in positive pressure mode, with half mask.~~

~~See respirator type required under 8.~~

~~7. Not greater than 5 milligrams (of compounds with no significant vapor pressure) per cubic meter~~

~~7A. Supplied air, operated in positive pressure mode, with full facepiece, hood, helmet, or suit.~~

~~8. Not greater than 5 milligrams of arsenic trichloride (and all compounds with significant vapor pressure) per cubic meter~~

~~8A. Self-contained breathing apparatus with full facepiece operated in pressure-demand mode;~~

~~8B. Combination breathing apparatus: supplied air, positive pressure full facepiece respirator with auxiliary self-contained compressed air supply.~~

~~9. Firefighting or any unknown, or known concentration greater than 5 milligrams per cubic meter.~~

~~9A. Any full facepiece pressure-demand self-contained breathing apparatus certified by NIOSH for a minimum service life of thirty minutes.~~

~~\* High efficiency filter - 99.97 percent efficiency against 0.3 micrometer monodisperse di(2-ethylhexyl) phthalate (DOP) particles.~~

~~NOTE: Any respirator approved for use at a particular concentration may be used at any lower concentration.~~

(B) Where employee exposures exceed the permissible exposure limit for inorganic arsenic and also exceed the relevant limit for particular gases, such as sulfur dioxide, any air purifying respirator supplied to the employee as permitted by this standard must have a combination high efficiency filter with an appropriate gas sorbent.

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(C) The employer shall provide a powered, air purifying respirator in lieu of the respirator specified in Section 5214(h)(3)(A) whenever:

1. An employee chooses to use this type of respirator; and
2. This respirator will provide adequate protection to the employee.

(D) Employers shall ensure that employees do not use half mask respirators for protection against arsenic trichloride because it is absorbed rapidly through the skin.

(E) Employers shall provide HEPA filters for powered and non-powered air-purifying respirators.

(F) The employer shall select and provide one of the following respirators for protection against arsenic trichloride (and all compounds with significant vapor pressure) concentrations not greater than 0.5 milligrams per cubic meter:

1. Gas mask, front or back mounted, equipped with high efficiency filter, acid gas canister, and full facepiece;
2. Any supplied-air respirator with full facepiece;
3. Any self-contained breathing apparatus with full facepiece.

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5217 to read:  
§ 5217. Formaldehyde.

\* \* \*

(g) Respiratory protection

\* \* \*

(2) Respirator program.

(A) The employer must implement a respiratory protection program in accordance with section 5144 (b) through (d) (except (d)(1)(C), ~~(d)(3)(C)2.a. and b.~~), and (f) through (m).

(B) If When employees use air-purifying respirators with chemical-cartridges or canisters that do not contain end-of-service-life indicators approved by the National Institute for Occupational Safety and Health, employers shall replace these cartridges or canisters as specified by subsection (d)(3)(C)(2)(b) of Section 5144, respirators are used, the employer must:

1. Replace the cartridge after three (3) hours of use or at the end of the workshift, whichever occurs first, unless the cartridge contains a NIOSH-approved end-of-life service life indicator (ELSI) to show when breakthrough occurs;
2. Unless the canister contains a NIOSH approved ELSI to show when breakthrough occurs, replace canisters used in atmospheres up to 7.5 ppm (10 x PEL) every four (4) hours and industrial sized canisters used in atmospheres up to 75 ppm (100 x PEL) every two (2) hours or at the end of the workshift, whichever condition occurs first.

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(3) Respirator selection.

(A) The employer must select, and provide to employees, the appropriate respirators as specified in ~~Table 1~~ Section 5144(d)(3)(A)1.

(B) The employer shall make available a powered air purifying respirator, adequate to protect against formaldehyde exposure to any employee who experiences difficulty wearing a negative pressure respirator to reduce exposure to formaldehyde.

(C) The employer shall equip each air-purifying, full facepiece respirator with a canister or cartridge approved for protection against formaldehyde.

(D) For escape, the employer shall provide employees with one of the following respirator options: A self-contained breathing apparatus operated in the demand or pressure-demand mode; or a full facepiece respirator having a chin-style, or a front- or back-mounted industrial-size, canister or cartridge approved for protection against formaldehyde.

(E) Employers may substitute an air-purifying, half mask respirator for an air-purifying, full facepiece respirator when they equip the half mask respirator with a cartridge approved for protection against formaldehyde and provide the affected employee with effective gas-proof goggles.

**TABLE 1. MINIMUM REQUIREMENTS FOR RESPIRATORY  
PROTECTION AGAINST FORMALDEHYDE**

| <i>Condition of use or formaldehyde concentration (ppm)</i> | <i>Minimum respirator required<sup>1</sup></i>  |
|---|---|
| Up to 7.5 ppm (10 x PEL)                                    | <del>Full facepiece with cartridges or canisters specifically approved for protection against formaldehyde<sup>2</sup></del>  |
| Up to 75 ppm (100 x PEL)                                    | <del>Full-face mask with chin style or chest or back mounted type with industrial size canister specifically approved for protection against formaldehyde. Type C supplied air respirator, pressure-demand or continuous flow type, with full facepiece, hood, or helmet.</del> |
| Above 75 ppm or unknown (emergencies) (100 x PEL)           | <del>Self-contained breathing apparatus (SCBA) with positive pressure full facepiece. Combination supplied-air, full facepiece positive pressure respirator with auxiliary self-contained air supply.</del>   |

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Firefighting

~~SCBA with positive pressure in full  
facepiece.~~

Escape

~~SCBA in demand or pressure demand  
mode. Full face mask, front or back  
mounted type with industrial size canister  
specifically approved for protection against  
formaldehyde.~~

-

<sup>1</sup>~~Respirators specified for use at higher concentrations may be used at lower concentrations.~~

<sup>2</sup>~~A half mask respirator with cartridges specifically approved for protection against  
formaldehyde can be substituted for the full facepiece respirator providing that effective gas-  
proof goggles are provided and used in combination with the half mask respirator.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections  
142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5218 to read:  
§ 5218. Benzene.

\* \* \*

(g) Respiratory Protection.

\* \* \*

(2) Respirator program.

(A) The employer must implement a respiratory protection program in accordance with section  
5144(b) through (d) (except (d)(1)(C), ~~(d)(3)(C)2.a. and b.~~), and (f) through (m).

(B) ~~If air purifying respirators, the employer must replace the air purifying element at the  
expiration of its service life or at the beginning of each shift in which such elements are used,  
whichever comes first.~~

(C) ~~If NIOSH approves an air purifying element with an end of service life indicator for benzene,  
such an element may be used until the indicator shows no further useful life.~~

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators as specified  
in Table 4 Section 5144(d)(3)(A)1.

(B) Any employee who cannot wear a negative pressure respirator shall be given the option of  
wearing a respirator with less breathing resistance such as a powered air-purifying respirator or  
supplied air respirator.

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(C) Employers shall provide employees with any organic vapor gas mask or any self-contained breathing apparatus with a full facepiece to use for escape.

(D) Employers shall provide organic vapor cartridges or canisters for use with powered and non-powered air-purifying respirators, and chin-style canisters for use with full facepiece gas masks.

**TABLE 1. RESPIRATORY PROTECTION FOR BENZENE**

| <i>Concentration of Airborne Benzene or Condition of Use</i>    | <i>Respirator Type</i>   |
|---|--|
| (a) <del>Less than or equal to 10X the PEL</del>                | <del>(1) Half mask air-purifying respirator with organic vapor cartridge.</del>  |
| (b) <del>Less than or equal to 50X the PEL</del>                | <del>(1) Full facepiece respirator with organic vapor cartridges; or<br/>(2) Full facepiece gas mask with chin style canister.<sup>+</sup></del> |
| (c) <del>Less than or equal to 100X the PEL</del>               | <del>(1) Full facepiece powered air-purifying respirator with organic vapor canister.<sup>+</sup></del>  |
| (d) <del>Less than or equal to 1,000 ppm.</del>                 | <del>(1) Supplied air respirator with full facepiece in positive pressure mode.</del>  |
| (e) <del>Greater than 1,000 ppm or unknown concentration.</del> | <del>(1) Self-contained breathing apparatus with supplied air respirator with auxiliary self-contained air supply.</del>                         |
| (f) <del>Escape</del>   | <del>(1) Any organic vapor gas mask; or<br/>(2) Any self-contained breathing apparatus with full facepiece.</del>                                |
| (g) <del>Firefighting</del>                                     | <del>(1) Full facepiece self-contained breathing apparatus in positive pressure mode.</del>  |

<sup>+</sup> (E) Employers shall ensure that Canisters used with non-powered air purifying respirators must have a minimum service life of (4) hours when tested at 150 ppm benzene, at a flow rate of 64 LPM, 25° C, and 85% relative humidity for non-powered air purifying respirators.

(F) Employers shall ensure that canisters used with tight fitting and loose fitting powered air-purifying respirators, have a minimum service life of (4) hours when tested at 150 ppm benzene at a The flow rate shall be of 115 LPM and 170 LPM, respectively, for tight fitting and loose fitting powered air purifying respirators.

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\* \* \*

NOTE: Authority cited: Sections 142.3, 9020, 9030 and 9040, Labor Code. Reference: Sections 142.3, 9004(d), 9009, 9020, 9030, 9031 and 9040, Labor Code.

\* \* \*

Amend Section 5220 to read:  
§ 5220. Ethylene Oxide.

\* \* \*

(g) Respiratory Protection and Personal Protective Equipment.

\* \* \*

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators as specified in the following table Section 5144(d)(3)(A)1.; however, employers shall not select or use half masks of any type because EtO may cause eye irritation or injury.

(B) Each air-purifying, full facepiece respirator shall be equipped with a front- or back-mounted canister approved for protection against ethylene oxide.

(C) For escape, the employer shall provide employees with any respirator permitted for use under subsections (g)(3)(A) and (B).

**~~REQUIREMENTS FOR RESPIRATORY PROTECTION AGAINST  
AIRBORNE EtO~~**

**~~CONCENTRATION OF EtO OR  
CONDITION OF RESPIRATOR USE~~**

**~~RESPIRATOR TYPE~~**

~~Equal to or less than 50 ppm~~

~~Full facepiece respirator with approved  
EtO canister, front or back mounted~~

~~Equal to or less than 2,000 ppm~~

~~Positive pressure supplied air respirator,  
equipped with full facepiece, hood, or  
helmet; or  
Continuous flow supplied air respirator  
(positive pressure) equipped with hood,  
helmet or suit.~~

~~Concentration above 2,000 ppm or  
unknown concentration (such as in  
emergencies)~~

~~Positive pressure self contained breathing  
apparatus (SCBA), equipped with full  
facepiece; or  
Positive pressure full facepiece supplied air  
respirator equipped with an auxiliary~~



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~~section.~~

~~Not in excess of 5 f/cc (50 X PEL).~~

~~Full facepiece air-purifying respirator  
equipped with high efficiency filters.~~

~~Not in excess of 10 f/cc (100 X PEL).~~

~~Any powered air-purifying respirator  
equipped with high efficiency filters or any  
supplied air respirator operated in  
continuous flow mode.~~

~~Not in excess of 100 f/cc (1,000 X PEL).~~

~~Full facepiece supplied air respirator  
operated in pressure demand mode.~~

~~Greater than 100 f/cc (1,000 X PEL) or  
concentration.~~

~~Full facepiece supplied air respirator  
operated in pressure demand mode,  
equipped with an auxiliary positive  
pressure self-contained breathing  
apparatus.~~

~~-~~

~~Note: a. Respirators assigned for high environmental concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.~~

~~Note: b. A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.~~

~~(D) Employers shall provide HEPA filters for powered and non-powered air-purifying respirators.~~

~~(E) Employers shall provide employees with an air-purifying, half mask respirator, other than a filtering facepiece respirator; whenever the employees perform:~~

~~1. Class II or Class III asbestos work for which no negative exposure assessment is available.~~

~~2. Class III asbestos work involving disturbance of TSI or surfacing ACM or PACM.~~

~~(EF) In addition to the above selection criteria, the employer shall provide a tight-fitting air purifying respirator equipped with high efficiency filters or a full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges or an auxiliary positive pressure self contained breathing apparatus for all employees within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and, the exposure assessment indicates the exposure level will not exceed 1 f/cc, as an 8-hour time weighted average. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.~~

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~~(D) In addition to the above selection criteria, when employees are in a regulated area where Class I work is being performed, a negative exposure assessment of the area has not been produced, and the exposure assessment of the area indicates the exposure level will not exceed 1 f/cc as an 8 hour time weighted average, employers must provide the employees with one of the following respirators:~~

- ~~1. A tight fitting powdered air purifying respirator equipped with high efficiency filters;~~
- ~~2. A full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges; or~~
- ~~3. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self contained breathing apparatus. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self contained breathing apparatus must be provided under such conditions when the exposure assessment indicates exposure levels above 1 f/cc as an 8 hour time weighted average.~~

\* \* \*

NOTE: Authority cited: Sections 142.3, 6501.5, 9020, 9021.5, 9030 and 9040, Labor Code.  
Reference: Sections 142.3, 6501.5, 6501.7, 6501.8, 6501.9, 6502, 9003, 9004(b), 9005, 9006, 9009, 9020, 9021.5, 9030, and 9040, Labor Code; and Section 25910, Health and Safety Code.